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ABSTRACT

Rotter's social learning theory was used as a basis for studying the effects of locus of control on the frequency of the responses of undesirable behaviors. Subjects, 12 fifth graders who had operant levels higher than desirable were monitored by either themselves, a peer, or by no agent for a period of eight weeks. Classes of behaviors (socially-oriented and self-oriented) were studied. An analysis of variance was used to compare the frequencies of the responses for the various subsamples from baseline to termination of the monitoring. A significant interaction term suggested greater decline for "public" behaviors than for "private" ones. None of the following hypotheses was supported: (a) the reduction of negative behaviors through self-monitoring positive and incompatible behaviors will be greater for internals than externals; (b) the reduction of negative behaviors through peer-monitoring of positive and incompatible behaviors will be greater for externals than internals; (c) the reduction of social-interactive negative behaviors will be greater than private negative behaviors for externals. (Author)

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Self-Monitoring as a Function of Task and Locus of Control in Fifth Graders

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Self-Monitoring as a Function of Task and Locus of Control in Fifth Graders

Abstract

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Rotter's social learning theory was used as a basis for studying the effects of locus of control on the frequency of the responses of undesirable behaviors. Twelve fifth graders who had operant levels higher than desirable were monitored by either themselves, a peer, or by no agent for a period of eight weeks. Two classes of behaviors (socially-oriented and self-oriented) were studied. An analysis of variance was used to compare the frequencies of the responses for the various subsamples from baseline to termination of the monitoring. A significant interaction term suggested greater decline for "public" behaviors than for "private" ones. None of the following hypotheses was supported: (a) the reduction of negative behaviors through self-monitoring positive and incompatible behaviors will be greater for internals than externals; (b) the reduction of negative behaviors through peer-monitoring of positive and incompatible behaviors will be greater for externals than internals; (c) the reduction of social-interactive negative behaviors will be greater than private negative behaviors for externals.

Self-Monitoring as a Function of Task and

Locus of Control in Fifth Graders

Most would argue that effective self-control techniques are desirable, especially in children as they progress through school. A number of studies (Lovitt and Curtiss, 1969; Broden, Hall and Mitts, 1971; Mahoney, Moore, Wade and Moura, 1973; Thoresen, 1974) has suggested that self-observation is necessary to self-change. There is evidence (Broden, Hall and Mitts, 1971) that self-observation itself may often be a discriminative stimulus. If self-observation is coincidental with recording of the observed behavior, then the appropriate term is self-monitoring. These two conditions could be regarded as separate behaviors: thus, a person could engage in a behavior without self-monitoring (self-recording). Since self-observation is by itself unobservable to others as well as to the individual, there is no way of knowing if it is taking place or not without monitoring one's self.

Although self-monitoring has proven to be an efficacious method for behavioral change, specific variables affecting self-monitoring have received little attention in the research literature. For example, only one study (McNamara, 1972) could be found that included a control group that did not engage in any kind of self-monitoring. Findings from this study indicated that both demand characteristics and expectancy effects may account for much of the reactivity that has been attributed to self-monitoring. Other researchers (McFall, 1970; Jeffrey, 1974; Kazdin, 1974) have utilized these components of self-monitoring and have come to similar conclusions.

Another rationale for examining the components of self-monitoring is reflected in studies (Broden, Hall, and Mitts, 1971; Fixsen, Phillips, and Wolf, 1972; Mahoney, Moura and Wade, 1973; Santogrossi, O'Leary, Romanczyk, and Kaufman, 1973; Bristol and Sloane, 1974; Glynn and Thomas, 1974; McKenzie and Rushall, 1974; Mahoney, 1974) in which self-monitoring was not effective or stable over time without either differential reinforcement or supplemental treatment strategies. If self-monitoring does not function alone as an effective change strategy, then we need to examine with greater

scrutiny task demand characteristics in conjunction with expectancy effects.

If expectancy is a concept more basic even than reinforcement, it may, in part, be an explanation for the effectiveness of self-observation. According to reinforcement theory, regardless of whether the behavior is negative or positive, if it is attended to, that attention increases the probability of its reoccurrence in the future. This is a convincing reason for using monitoring as a reinforcer for positive behaviors. But reinforcement assumes that the subject perceives a causal relationship between his behavior and the occurrence of reward (e.g., success). If such a contingency relationship between one's acts and the consequences is not perceived, then there may be no reason to assume that behavior followed by reward (a consequence) will be repeated. Rotter (1966, p. 1) gave a precise definition of the locus of control of reinforcement:

> When a reinforcement is perceived by the subject as following some action of his own but not being entirely contingent upon his action, then, in our culture, it is typically perceived as the result of luck, chance, fate, as under the control of powerful others, or as unpredictable because of the great complexity of the forces surrounding him. When the event is interpreted in this way by an individual, we have labeled this a belief in external control. If the person perceives that the event is contingent upon his own behavior or his own relatively permanent characteristics, we have termed this a belief in internal control.

Rotter's social learning theory predicates two determiners of human behavior: value of the goal toward which one strives and expectancy that a certain behavior will lead to that valued goal. Thus, in a self-control program, for example, no matter how valued a goal may be for an individual, no progress will be made unless one perceives causality between one's actions and reaching that goal.

Bellack and Tillman's (1974) data suggested that externals attend significantly more to external evaluation than internals. By lacking a feeling of control over the environment, externals have the necessity to seek the evaluation of others. But an understanding of the source of evaluation must be somehow involved

with the nature of the behavior in question. For example, some inappropriate behaviors (e.g., getting out of seat, slamming desk, failing to hand in assignments) are private tasks which do not involve direct engagement of other children. On the other hand, some inappropriate behaviors (e.g., hitting another child, conversing with a child, knocking neighbor's books off the desk) are public tasks which are social-interactive. The assumption here is that the nature of the task (public or private) should have differential effects for externals but not for internals. No research study could be found that controls for type of task, i.e., social interactive ("public") vs. non-social interactive ("private"). This may also provide a partial means of explicating Levenson's (1972) findings that externality is confounded by combining chance conditions with powerful other conditions.

The experimental treatment involved self-monitoring, peer-monitoring, or no monitoring of both "public" and "private" behaviors. It is believed that the public behaviors are determined more by influences similar to them (i.e., peer pressure) and that more "private" behaviors would be under the control of the self. While there is no evidence to expect self-monitored private behaviors to be of different strength than peer-monitored public behaviors, both of these should be more easily modified than either self-monitored public behaviors or peer-monitored private behaviors. This latter statement was one research hypothesis. This question was asked independently of locus of control.

Locus of control does become important when its influence on this process is studied. It was suggested that the process of reinforcement via outside/internal sources is amplified according to the person's internality; that is, if a subject's public behavior is being influenced by a peer, then this will be enhanced (made even greater) if the person has an external locus of control. In similar fashion, the self-monitoring of a private behavior should be greater than the average if the subject has an internal locus of control. And self-monitoring of a private behavior should be greater than the average if the subject has an internal locus of control.

The focus of the present study, then, was the ways in which the conditions would be found to interact with each other. Of primary focus, however, were the interactions of the factors with the pre-post condition. In words, several of these were: (a) the reduction of negative behaviors through self-monitoring positive and incompatible behaviors will be greater for internals than externals; (b) the reduction of negative behaviors through peer-monitoring of positive and incompatible behaviors will be greater for externals than internals; (c) the reduction of social-interactive negative behaviors will be greater than private negative behaviors for externals.

The research questions were studied within an analysis of variance design with three factors and one dependent variable. The three factors were: Source of Control (Self/Peer/None); Type of Behavior (Public/Private); and Locus of Control (Internal/External). The dependent variable was number of correct responses per time unit.

METHOD

Subjects:

Fifth graders in typical public schools were used in this study for the following reasons: (a) in this age range there is a maximum variability in locus of control scores; (b) there is a maximum variability of inappropriate classroom problems involving both self and others; (c) neither teacher nor peer pressure should predominate in this age range; (d) they should be mature enough to monitor and be sufficiently interested in the procedure; and (e) at this grade level, they are within the same classroom with the same teacher most of the day. The sex of the child was not considered a meaningful factor in the present study for two reasons: (a) there have been no consistent sex differences found in the ability to monitor one's own behavior and (b) allowing the teachers to select children regardless of sex was felt to contribute to the external validity of the experiment.

Procedure:

At the beginning and end of the study (eight weeks later) the Intellectual Achievement Responsibility Questionnaire (IARQ), a measure of locus of control, (Crandall, et al., 1965), was administered to all the children in each classroom in which there was a subject. Their teachers read the questionnaire in an effort to control for reading ability.

The children's IARQ scale is composed of 34 forced-choice items. Each item stem describes either a positive or a negative achievement experience which routinely occurs in children's daily lives. This stem is followed by one alternative stating that the event was caused by the child and another stating that the event occurred because of the behavior of someone else in the child's immediate environment. Each item was coded for internality and a composite score of 34 items was used. In addition to an I (internal or self) responsibility score, separate subscores may be obtained for beliefs in internal responsibility for successes (I + score) and for failures (I - score).

Split-half reliabilities (corrected for attenuation) for elementary children have ranged from .54 - .57 (Crandall, et al., 1965) to .71 - .79 (Meyer, 1967). Test-retest reliabilities over 7-8 weeks in these same studies ranged from .66 to .69 for total scores.

Evidences for construct validity are reflected in the observation that adequate achievers scored higher on internal (I total) control than did underachievers (Bach and Austrin, 1972); internals gave more creative responses than externals (Ducette, et al., 1972); boys who took credit for their academic success (I+) were most likely to obtain higher grades adn achievement test scores (Messer, 1972; Reimanis, 1973; Solomon and Houlihan, 1969).

A list of inappropriate and negative behaviors (Madsen, Becker, and Thomas, 1960) was converted into a checklist format. Directions to the rater (usually the classroom teacher) were added; it was felt these would aid the rater in interpreting the three points of the Likert scale used. The behaviors were categorized according

to type of disruption involved to aid the rater in forming a mental set. Crude analysis suggested that between two and three minutes should suffice for a teacher who has observed a child for several weeks or more. The data were used initially for two purposes: (1) they formed norms that both the participating teachers, their administrators, and other educators may find useful in deciding what kinds of behaviors needed immediate attention by the school staff, and (2) they allowed the present researchers to pick subjects who were evincing behaviors that could be monitored within the present study. The behaviors have been categorized according to type of disruption involved, that is, public or private. "Public" behaviors included disruptive actions such as shoving another child, grabbing a peer's book, or talking out loud. "Private" behaviors are more individualistic, including nail-biting, tapping feet, or aimless walking. The data allowed the present researchers to pick subjects who were evincing similar behaviors from those originally nominated by the teachers as of immediate importance.

Subjects were then randomly assigned to the three treatment conditions: (a) Self-monitoring, (b) Peer-monitoring, and (c) No monitoring. With the large number of cells in the design (12) it was impossible to plan for replication within any cell. Since all hypotheses excepting the four-way interaction could be tested with a single subject per cell, no severe loss was felt. It would have been desirable to have many children participate, but the confines of the design and the wish to minimize cross-subject contamination (by having as few subjects in any given classroom as possible) simply did not allow a large sample size.

The subjects were not aware that they were participating in a study. To control for expectancy effect, subjects assigned to the self-monitoring condition were told that we were obtaining information for later observation purposes. To prevent contaminating the self-monitoring condition with peer reinforcement, subjects did not receive any information feedback from the peer. If there was no information feedback to the S's, then peer reinforcement should have been weakened.

The observed behaviors became that behavior suggested by the teacher as being most characteristic of each child. A baseline was obtained in an unobtrusive manner by a trained observer over a two-week (ten class day) period in the following schedule. For each of seven randomly selected days of the ten, seven times were randomly selected for observation. In this way the stability (reliability) of the behavior was determined. The teachers were instructed to continue conducting classes in their usual manners.

Other investigators (Fixsen, Phillips, and Wolf, 1972; Flowers, 1972; Hendrick, Thoresen, and Hubbard, 1973) have demonstrated that the validity of self-monitoring can be improved through training in the discrimination and labeling of the targeted behavior. Therefore, once the extended baseline was established, the S's assigned to the self-monitoring group were shown how to obtain accurate and reliable self-observational behaviors. It was also decided to provide the same training for the peer monitors so that any performance could not be attributed to training vs. no training.

The no-monitoring S's served as a control. Although unobtrusive baseline data were obtained, the S's were not given the baseline data nor advised of any aspect of the program. The teachers involved were asked to maintain this confidentiality of data.

Although the teacher was advised in all conditions to attempt to continue as he/she would typically do, a decrease in negative behaviors early into the study could possibly alter the teacher's typical reactions and serve as a contaminating reinforcing element. Therefore, to try to control for this, the observer also coded teacher approval or disapproval behaviors following both appropriate and inappropriate S's behaviors. Madsen, Becker and Thomas' (1968) Coding Definitions for Teacher Behaviors were used. Should there have been a significant shift in teacher behaviors from baseline teacher behaviors, the observer was to inform the teacher and request correction to baseline.

The second observer visited the classroom at random intervals to observe the S's over the duration of the study (eight weeks). A second observer was employed during the study so that the S's had no knowledge as to the purpose of the observer being in the classroom. This was to minimize the possibility of confounding the effect of the intervention (peer or self-monitoring) with monitoring by an authority. To minimize the expectancy effect, the teacher explained that the observer was a student in education who was trying to learn what teaching is about.

The S's were provided wrist counters and instructed to to use them unobtrusively. In order to determine if the S's were reliably self-monitoring, during the first day each S used the wrist counter at assigned time intervals and reported this to an observer. Once the frequency was reported, the counter was reset and recording was resumed. On the second day, the same procedure was followed except that the observer was not present all the time. The S was then told that another child in the classroom may be asked to be an unobtrusive observer on subsequent days. Whenever there was a discrepancy in recording data between the observer and the S, the relevant parts of the training program were reiterated. When there was high reliability of self-recording and recording by the observer, the S's were instructed to use actuarial recording (counting each separate occurrence of the response) rather than time sampling during the first three weeks and then switch to a specified time sampling for the remaining three weeks.

A similar training program was used for peers who had been chosen by the teacher to monitor the S's within the same classroom. Each peer monitored only one S, using the same procedure outlined for the self-monitoring group. S's were apprised of the peer monitoring them, but were not given any information feedback.

Each subject in the study was observed during a baseline period, then trained according to one of the three treatments (self-monitoring, peer-monitoring, and no monitoring) to which he had been assigned, and finally observed on the last day of the eight-week treatment period. The number of observed inappropriate behaviors *per diem* became the criterion variable. Since these observations were taken as

baseline and also eight weeks later, the two time points became an independent variable called "Pre-Post." This last *per diem* measure was extrapolated from the last day's time sample to a complete day's length.

As a summary of the above, then, the other independent variables were Locus of Control (Internal, External), Source of Reinforcement (Self, Peer, and No Monitoring) and Type of Behavior (Public, Private).

The complete 3×2^3 design, then, had 24 cells. One half of the design represented baseline conditions and the other half replicated this pattern after imposition of the treatment. There were twelve subjects in the study, one subject in each cell of each replication; as was noted above (p. 6), the complexity of the design forced this condition. With the degrees of freedom thus restricted, not all possible hypotheses could be tested, and it was decided to proceed as follows. Assuming the four-way interaction to be non-significant (there was no within variability), this value was used as the denominator in the F ratio to test the three-way interaction terms. When these were found to be non-significant, the sums of squares for all four terms were summed and divided by 8 (the degrees of freedom) yielding a value of 0.235; this term became the "error" term for all other F ratios. These were all tested with either 1 or 2 degrees of freedom in the numerator and 8 degrees of freedom in the denominator.

RESULTS

The results of the four-way analysis of variance are presented in Tables 1 and 2 and in Figures 1 through 4. As can be seen from Table 1, seven of the effects were significantly larger than one would have expected by chance. Significant main effects found included internality and source of reinforcement. There were no differences found among types of behavior. Among the significant interactions found were interaction between internality and source of reinforcement, internality and type of behavior, and source of reinforcement and type of behavior. However, the terms which are most significant from an experimental point of view would be within subjects' source of variation. Table 1 indicates there was a significant overall

pre-post trend and a significant interaction of pre-post with internality; none of the other interaction terms was significant.

Reference to Table 2 may help to explain in exactly what direction the significant results lay. Here the means have been presented for all significant differences found in the analysis. Thus, inspecting them in the same order as the effects presented in Table 1, it can be seen that overall the externals had more behavioral problems than the internals, in approximately the ratio 2 to 1. The source of reinforcement has no direct bearing on the present problem since subjects were randomly allocated to the three treatments. The results suggest that the effects of random allocation may not have been met with only 12 subjects.

When internality was crossed with source of reinforcement, the same indication of the lack of balance was found. On the other hand, data of psychological significance are available in the crossing of internality with type of behavior. Here it can be seen again that the externals had an overall higher level of misbehaviors than internals, but, interestingly, those children with an external locus of control who also had misbehaviors which had been classified as private showed a higher frequency of misbehaviors per diem than any of the other four groups. Interestingly, in contrast to this, the children who had an internal locus of control with private behaviors tended to have the lowest per diem frequency of misbehaviors.

Perhaps the most interesting finding of the present study was the last significant interaction term, internality crossed with pre-post. As can be seen from Table 2, those children with an external locus of control decreased from an average of 2.76 misbehaviors per diem to a final level of 1.12. The internal children went from 1.10 to .69 errors per diem. The significant interaction terms means have been graphed and are presented in Figures 1 to 4.

DISCUSSION

Unfortunately, for the self-monitoring factor there were no significant differences among the means as this factor was studied over time. Hence, for the sample of fifth graders studied in the present research, there is no evidence that one source of monitoring of children's behavior is any better or worse than another regardless of whether the child is an internal or external. As with any research, there are potentially many reasons why no significant differences were found, and these may be worth pursuing in future studies. First, one might examine the socio-psychological dynamics of the experimental pairs of children, one of whom was observing the other. For example, what were the perceptions of the peer monitor by the children being monitored? Was perceived status of the monitor a possible factor, since the role was chosen by the teacher rather than the children? Is it possible that internals by operational definition would not respond to a "significant other" (the monitor) since they perceive and prefer their own control?

On the other hand, there are several other effects that one perhaps should be aware of but that may not have any direct experimental implications for research. While the experimental treatment was planned and executed as unobtrusively as possible, there still existed the possibility of the Hawthorne effect on all subjects. One might also question the effectiveness of this type of training, this type of procedure, or this type of observational technique with children at the fifth-grade level. It may be that a certain degree of maturity or sophistication is necessary for such prolonged observation.

It is interesting to note that the interaction of internality with type of behavior does conform to the theory of internal-external locus of control as posited by Rotter, that is, that the externally-oriented children do indeed have more behavioral "problems" than children who are more internally oriented. Evidence from Brissett and Nowicki (1973) indicated that externals react to frustration in an intropunitive and less constructive way than internals. By exhibiting less resistance to influence, coupled with a generalized belief of the lack of efficacy of

their own efforts, externals tend to be more vulnerable and less capable of coping adequately with their environment.

The interaction of locus of control (internality-externality) with type of behavior might be seen as a validity check, the IARQ validating the behavioral checklist (and perhaps also vice versa). There is, of course, one problem with this: that would involve the very high frequency of children with internal locus of control and private behaviors as this contrasts with the very low frequency of misbehaviors of children with internal locus of control and private behaviors. One would have expected perhaps externals with public behaviors to have the highest overt response rate and the internals/private to have the lowest. There might be several explanations for the present results. For example, it may be that if a child with an external locus tends to have a private type of misbehavior problem, then because of the external locus, he may have a tendency to act out more overtly in perhaps a search for reinforcement. Another more psychodynamic explanation relates to the correlation between anxiety and externality cited in a dozen studies reviewed by Phares (1976). There is probably more anxiety present for externals in private rather than public behaviors. And with less reinforcement from peers, this anxiety tends to be more internalized and perhaps maladaptive. At least public misbehaving shows some social interaction, albeit negative. In any case, the psychological dynamics of these two factors would certainly merit future research.

Finally, it should be noted that both internals and externals decreased overt behaviors over the time span of the experiment. As a matter of fact, the externals decreased their behaviors more than the internals -- 59% decrease for the externals in comparison with 37% for the internals. There may be, of course, two reasons for this, the first of which is psychologically pleasing, and the second of which may not be so. In the first place, it may be that children who are externally oriented are indeed more susceptible to external reinforcement than children who are more internally oriented. Since the monitoring, whether self or peer, attended to

positive behaviors, rather than negative, it suggests that positive external reinforcement may be more salient for externals than internals. It is also possible that peer monitoring for externals may still have been psychologically more significant for externals than self-monitoring was for the internals, which might also explain the larger decrease in misbehaviors for the externals. Secondly, it should be noted that the externals did have a baseline rate which was considerably higher than the internals. It may indeed be the fact that the externals were at a position extreme enough to bring about a regression to the mean. Furthermore, the externals have more room in which to change, hence more potential for "growth." Unfortunately, the statistical properties of this psychological trait, which marks the difference between externals and internals, remain unknown.

TABLE 1

ANALYSIS OF VARIANCE SUMMARY TABLE WITH RAW DATA AS CRITERION[1]

Source of Variance	Sums of Squares	Degrees of Freedom	Mean Square	F Ratio	
Between Subjects	21.802	11			
Internality (1)	6.567	1	6.567	27.944	**
Source of Reinforcement (2)	3.253	2	1.626	6.919	*
Type of Behavior (3)	0.931	1	0.931	3.962	N.S
(1)x(2)	5.546	2	2.773	11.800	**
(1)x(3)	1.860	1	1.860	7.915	*
(2)x(3)	3.567	2	1.783	7.587	*
(1)x(2)x(3)	0.080	2	0.040	0.102	N.S
Within Subjects	10.611	12			
Pre-Post (4)	6.324	1	6.324	26.911	**
(1)x(4)	2.253	1	2.253	9.587	*
(2)x(4)	0.141	2	0.071	0.302	N.S
(1)x(2)x(4)	0.360	2	0.180	0.459	N.S
(3)x(4)	0.004	1	0.004	0.017	N.S
(1)x(3)	0.088	1	0.088	0.374	N.S
(1)x(3)x(4)	0.656	2	0.328	0.837	N.S
(1)x(2)x(3)x(4)	0.784	2	0.392	-	

*Significant at $\alpha = .05$

**Significant at $\alpha = .01$

[1]See text for explanation of denominator of F ratio

TABLE 2

Means Used to Test the Hypotheses,
for Significantly Non-Null Results Only

Factor	Level Names		
	Means		
Internality	External	Internal	
	1.942	0.896	
Source of Reinforcement	Self	Peer	No
	1.810	1.521	0.926
Internality x Source of Reinforcement	Ext,S	Ext,P	Ext,N
	2.998	1.589	1.239
	Int,S	Int,P	Int,N
	0.622	1.454	0.612
Internality x Type of Behavior	Ext,Pub	Ext,Pri	
	1.467	2.417	
	Int,Pub	Int,Pri	
	0.977	0.814	
Source of Reinforcement x Type of Behavior	S,Pub	P,Pub	N,Pub
	1.193	1.836	0.637
	S,Pri	P,Pri	N,Pri
	2.426	1.207	1.214
Pre-Post	Pre	Post	
	1.932	0.906	
Internality x Pre-Post	Ext,Pre	Ext,Post	
	2.762	1.122	
	Int,Pre	Int,Post	
	1.103	0.689	

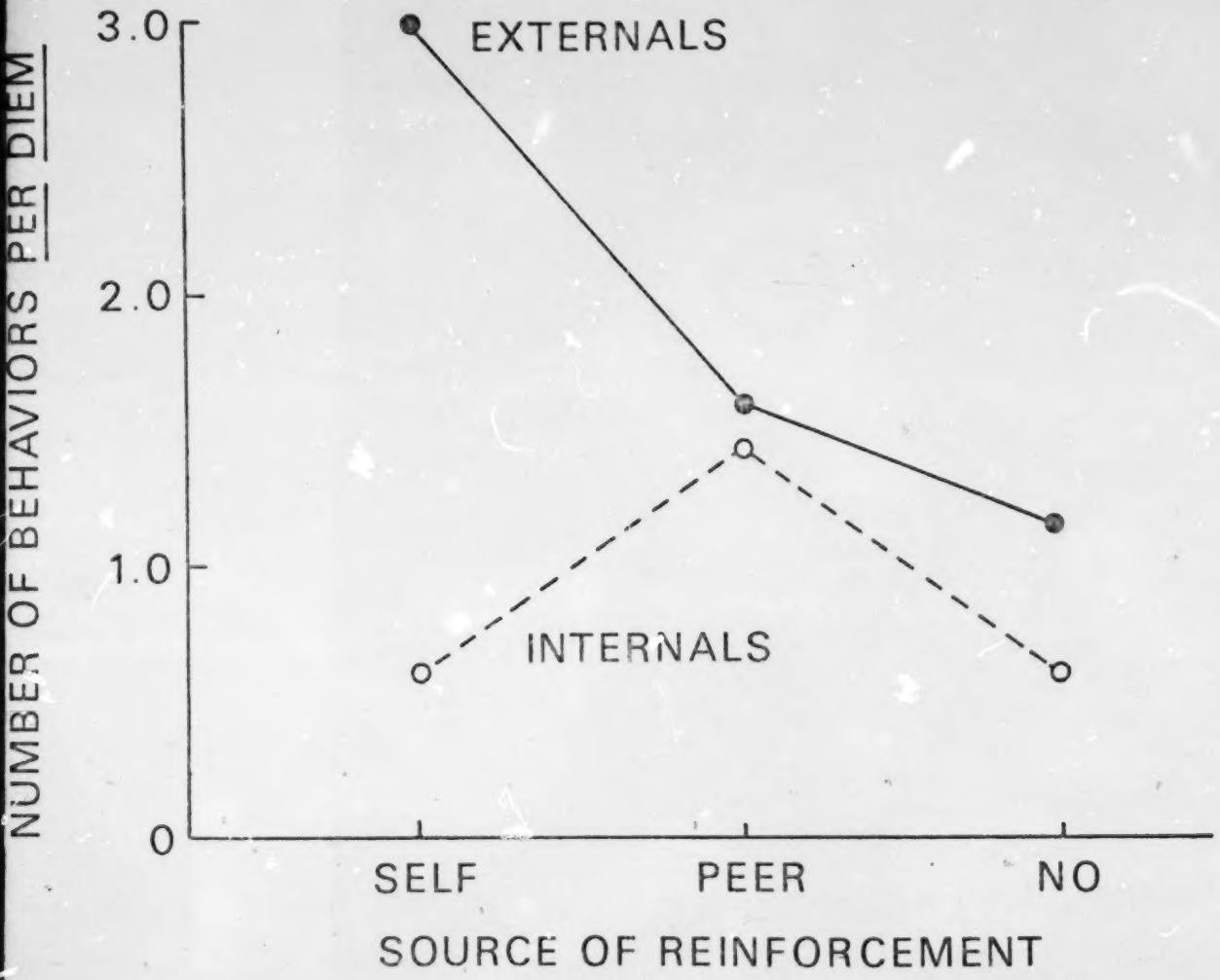

Fig. 1: Interaction between Internality - Externality and Source of Reinforcement

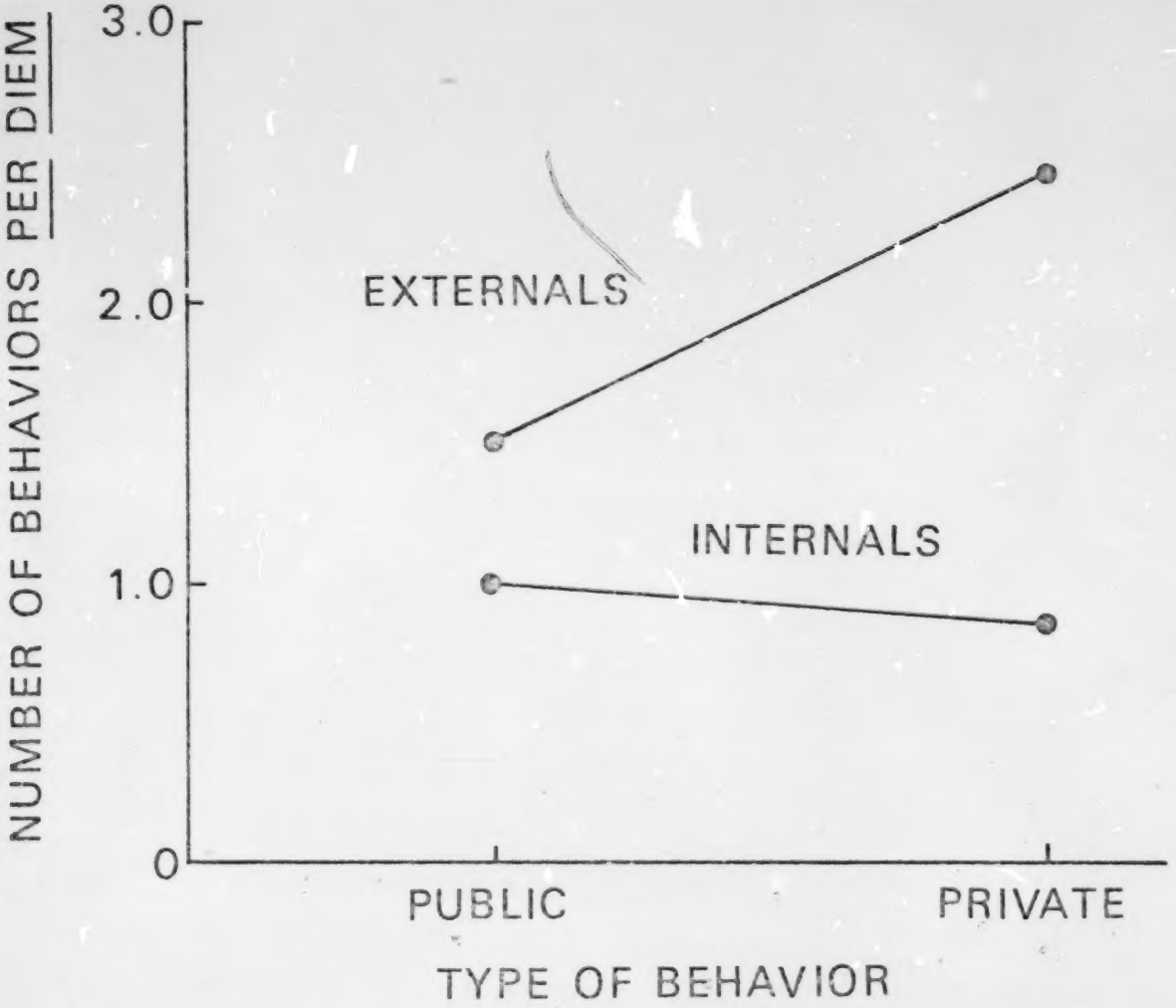

Fig. 2: Interaction between Internality - Externality and Type of Behavior

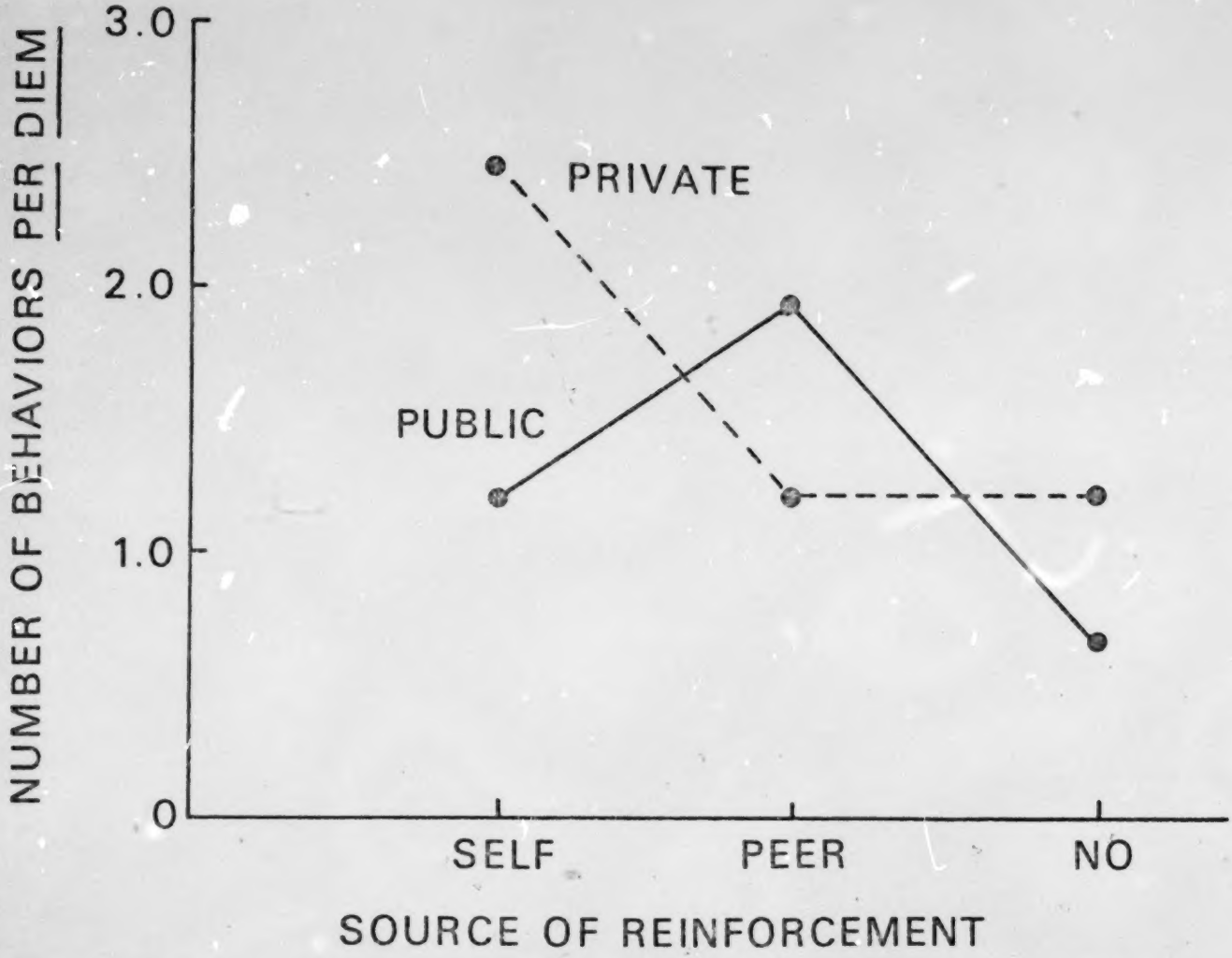

Fig. 3: Interaction between Source of Reinforcement and Type of Behavior

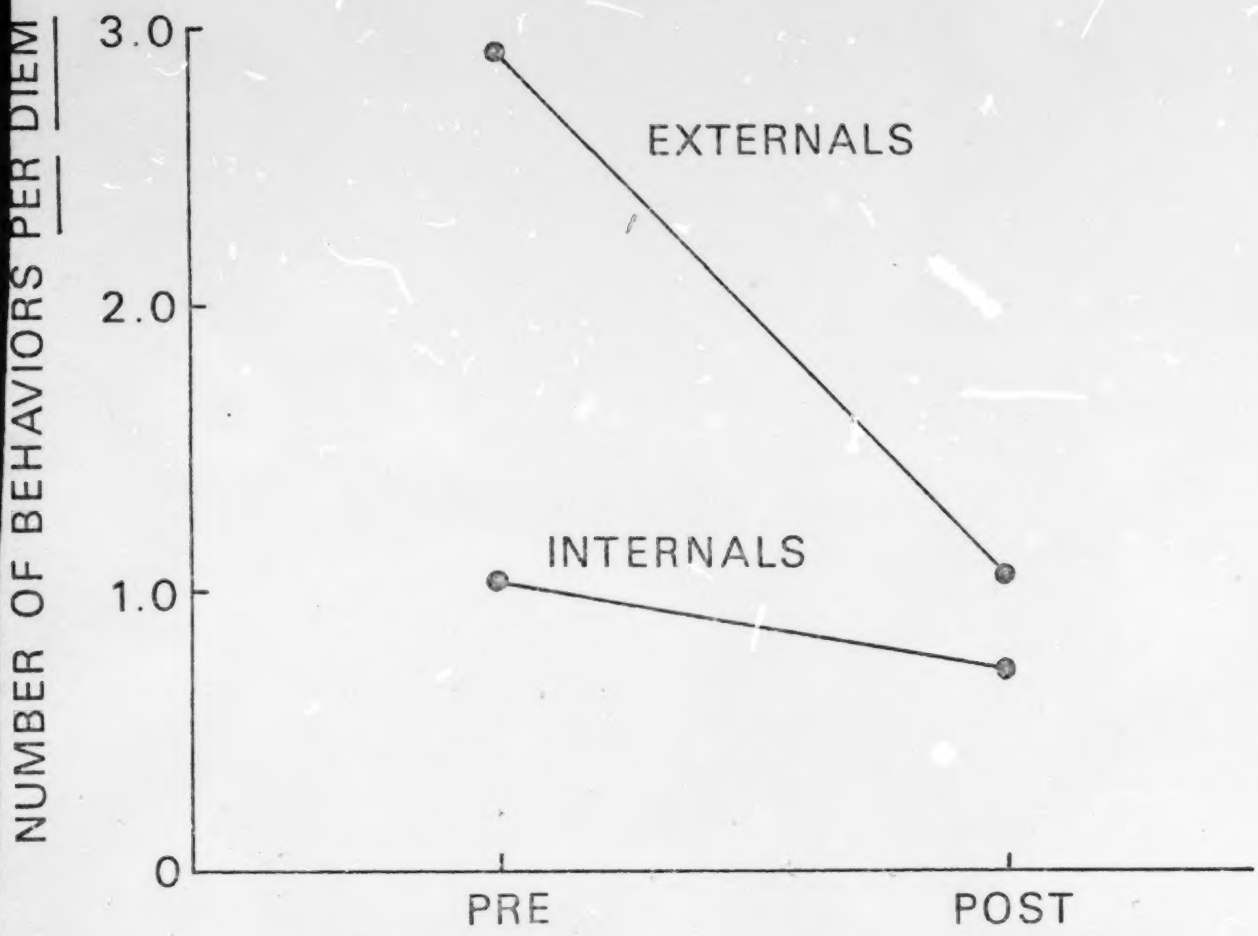

Fig. 4: Interaction between Pre-Post and Externality

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